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ABSTRACT

A study was conducted to determine the research and development priorities for Minnesota as perceived by vocational educators and selected groups of industrial personnel trainers and to determine to what extent research and development priorities have changed during the past seven years. A total of 998 vocational educators and 364 industrial personnel having responsibilities related to personnel training responded to a survey questionnaire. The survey questionnaire, which contained forty-nine items related to research and/or development activities, requested respondents to rate the item's criticalness of need for research. Survey items were obtained from a similar national survey of vocational education priorities conducted by the Center for Vocational and Technical Education at Ohio State University. Findings indicate that in general, vocational educators and industrial personnel prioritized the items in a similar fashion. The two highest rated items were (1) provide opportunities for all vocational students to acquire the basic skills (e.g., reading, communication, math) required for coursework and jobs and (2) improve opportunities for inservice vocational personnel to renew and expand their competencies. (The survey instruments and data analysis information are appended.) (Author/LRA)

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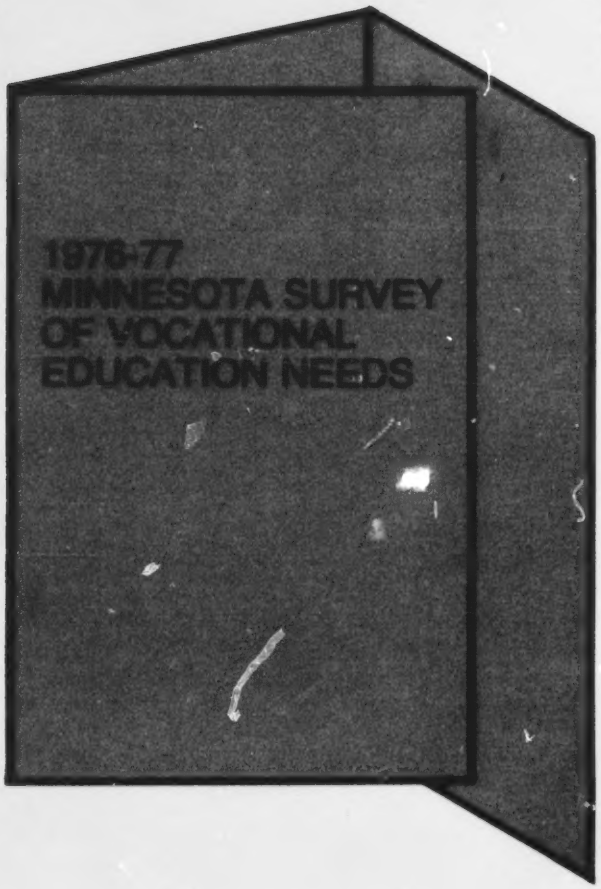

Vocational Education Research and Development Priorities for Minnesota

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April, 1978

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Prioritizing of vocational education research needs for Minnesota, via a survey questionnaire, required a substantial amount of thoughtful effort from many vocational educators and industrial personnel throughout Minnesota. Validity and practical utility of the study is dependent upon a large number of returns. Thus, great appreciation is extended to those who actively participated in this survey by completing the questionnaire. Also, this research effort would have been limited in scope and generalizability without the cooperation of the Administrative Management Society, the American Society for Training and Development, and the Twin Cities Personnel Association. Special thanks is due their officers and boards of directors for requesting their membership to participate in the study as well as for making their mailing lists available. The efforts of Dr. Edward Morrison at The Center for Vocational and Technical Education, The Ohio State University, in developing the items used in this survey, probably contributed more to the utility of this study than any other factor. Finally, great appreciation is due Marilyn Selb for her careful typing and meticulous proofreading.

Ron Dreyer

ABSTRACT

During 1976-77, the Minnesota Research and Development Center (MRDC - formerly the Minnesota RCU) conducted a survey for the purpose of formulating vocational education research and development priority recommendations. These recommendations were forwarded to the Minnesota Research and Development Review Committee as an additional information source for decisions relating to the allocation of limited funds for research activities in the state.

People responding to this survey included Minnesota vocational educators and industrial personnel having responsibilities related to personnel training in Minnesota. A total of 998 vocational educators and 364 industrial personnel responded to the survey.

The survey questionnaire employed in this study contained 49 items related to research and/or development activities. For each of the 49 items respondents were requested to rate the item's criticalness of need for research. These items were obtained from a similar national survey of vocational education priorities conducted by The Center for Vocational and Technical Education at Ohio State University.

In general, vocational educators and industrial personnel prioritized the items in a similar fashion. One method to arrive at a priority recommendation was to accept the highest rated items as indicators of research and development priorities. The two highest rated items were:

- Provide opportunities for all vocational students to acquire the basic skills (e.g., reading, communication, math) required for coursework and jobs.

- Improve opportunities for inservice vocational personnel to renew and expand their competencies.

An alternative method to interpret the data was to group the 49 individual items into ten broad areas and then select the highest area based on an average of the items within that area. Next, within the highest area, the highest items should be selected. The area of "Inter-Intra-Agency Communication" was rated as having the most critical research priority. Within this area, the items rated highest are as follows:

- Better communicate the benefits and content of vocational education to parents, students, employers, and general educators.

- Increase collaboration with key segments of the employment community (e.g., business, industry, organized labor, government).

"Curriculum Content" and "Staff Development" were the next two broad areas rated as having a high priority.

To a considerable extent, the various areas of employment (e.g., secondary vocational center, post-secondary vocational, university, etc.) prioritized the items and areas in a similar fashion. This was also true of the several vocational fields (e.g., agriculture, home economics, trade and industry, etc.). The only exceptions were the fields of guidance and special needs. Items related to "Curriculum Content" and then "Student Services" were rated by guidance personnel as having the highest priority. Special needs personnel perceived "Student and Behavior Problems" and then "Inter-Intra-Agency Communications" as the areas having the greatest need for research and development activities.

PREFACE

The Minnesota Research and Development Center for Vocational Education (formerly the Minnesota Research Coordinating Unit for Vocational Education - RCU), as part of its continuing responsibilities to the State of Minnesota, assists the Division of Vocational and Technical Education, State Department of Education, to identify priorities for research, development and personnel development activities. This is the third of such studies that have been conducted since 1970.

The purpose of identifying priorities for vocational education is to (a) insure that state and federal funds are being allocated to those problem areas which are of most importance to the state's long-range plan for improving vocational education programs through the conduct of research, and (b) to assist the Minnesota Research and Development Center for Vocational Education (MRDC) to plan a program of R & D activities which have the greatest potential for impacting students and classroom activities within local education agencies throughout the state.

The purposes of this study were two-fold: (1) to determine the R & D priorities for the state as perceived by vocational education and selected groups of industrial personnel trainers, and (2) to determine to what extent R & D priorities have changed during the past seven years. It is expected that this report will assist the state as well as local educational agencies to identify critical areas that need continual and programmatic R & D efforts and to insure that state and federal funds are expended on the most critical problems facing the field of vocational education in the State of Minnesota.

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INTRODUCTION AND PURPOSE OF THE STUDY

In order to formulate vocational education research and development priority recommendations, the Minnesota Research and Development Review Committee solicited the assistance of the Minnesota Research and Development Center for Vocational Education (MRDC).[1] Given a limited supply of research funds to spend on R & D projects, it was desired to determine those vocational education research needs that were perceived by vocational educators and selected industrial personnel as maximally important during 1976-77. With this as the major impetus, the MRDC designed and conducted a survey with the following objectives:

1. Determine and prioritize general and specific research needs for vocational education in Minnesota that are perceived to be most critical.

2. Determine the extent to which vocational education research needs of (a) vocational educators and (b) selected industrial personnel differ on the prioritized ratings.

3. Determine and prioritize the specific needs and general research areas indicated to be most critical for (a) each area of employment and (b) each vocational field as rated by vocational educators in Minnesota.

4. Determine the extent to which the prioritized vocational education research needs of vocational educators are different across (a) areas of employment and (b) vocational fields.

5. Determine if vocational education research priorities are related to the number of years an individual has been associated with vocational education.

6. Determine the extent to which vocational educators have been involved in the conduct of research and development activities.

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[1] Prior to June 1, 1977 the MRDC was officially referred to as the Minnesota Research Coordinating Unit for Vocational Education.

7. Determine if there is a difference between the research and development priorities of 1976-77 and those of 1970 and 1971.

POPULATION AND SAMPLE

The population was defined by two general components: (1) Minnesota vocational educators and (2) industrial personnel having responsibilities related to vocational training in Minnesota. The vocational educator segment of the population was characterized by areas of employment that included personnel in elementary schools, junior and senior high schools, the University of Minnesota, four-year state universities and personnel in state education agencies, secondary vocational centers, post secondary vocational schools (AVTI), and junior and community colleges. Further, the vocational educators were also classified according to vocational fields (i.e., agriculture, home economics, administrator, business and office, health, distributive education, technical, trade and industry, guidance, and special needs).

The sampling procedure was accomplished by means of convenience sampling. The mailing list of the MRDC was employed as the mechanism to identify vocational educators to be surveyed. The mailing list contained approximately 2,500 names of vocational educators in Minnesota and was assumed to adequately represent the intended population of vocational educators.

The segment of industrial personnel involved with training included persons across industries as categorized by the United States Department of Commerce. These industrial classifications are as follows: (1) agriculture, forestry, and fisheries; (2) business and repair services, (3) construction, (4) entertainment and recreation services, (5) finance, insurance, and real estate, (6) manufacturing, (7) mining, (8) personal services, (9) professional and related services, (10) public administration, (11) transportation, communications, and other public utilities, and (12) wholesale and retail trade.

A convenience sampling scheme was also employed to sample industrial personnel involved with training. The mailing lists from the Minnesota members of the Administrative Management Society (AMS), American Society for Training and Development (ASTD), and the Twin Cities Personnel Association (TCPA) were used as the source for identifying industrial personnel associated with training. The membership of these professional organizations is heterogeneous but was judged as a relevant and

sufficient group from which to solicit the views of industrial personnel concerning vocational education research needs.

A total of 998 vocational educators and 364 industrial personnel responded to the survey. Appendix A details the percent of returns for vocational educators by area of employment and vocational field and for industrial personnel by professional membership. Due to limited responses in a few areas and fields, some categories of responses were omitted or collapsed. Thus, the category of elementary school was eliminated, junior high school respondents were combined with senior high school respondents and the University of Minnesota and other 4-year state universities in Minnesota were combined.

INSTRUMENTATION

Two separate yet similar instruments were developed in the 1976-77 Minnesota Survey of Vocational Education Needs. The two instruments had identical items but differed in terms of background information since instruments were sent to vocational educators and industrial personnel. These instruments are included in Appendix B. Each item has provisions for the respondent to rate the priority of a need on a five point Likert Scale with low, medium, and critical as the anchors. Both instruments provided an opportunity for free responses and were designed as postage paid self-mailers.

The items included in the instruments were obtained from a similar national survey of priorities conducted by Dr. Edward Morrison at The Center for Vocational Education, The Ohio State University, during 1976. An extensive and systematic procedure was used by The Center to develop the problems and needs experienced in operating vocational programs. The problem and need statements were extracted and assembled from a review of the published literature and other significant studies conducted by vocational educators. Items for this study were categorized into the following five groups: (1) management and administration, (2) personnel development, (3) curricula content, (4) educational functions, and (5) learners. Preliminary pilot testing, analysis, and review preceded the final development of the instrument. This comprehensive development procedure is further evidence of content validity.

ANALYSIS

The 49 research need statements in the questionnaire were analyzed principally on two levels. The first entailed the calculation of summary statistics for each item in the survey for vocational educators, by area, by field, and for industrial personnel and then for all respondents. Secondly, similar analyses (i.e., by area, field, etc.) were performed on ten factors or clusters of the original 49 items. These two levels of analysis facilitate decision making for both general and specific research needs.

Two analysis procedures were employed in an attempt to statistically aggregate the 49 need statements into logical groupings. The rationale for collapsing the items into factors was to facilitate the identification of more general problem areas composed of similar specific research need statements.

Two general statistical procedures are available to perform the desired aggregation; these methods are cluster analysis and factor analysis. A review of literature suggested that cluster analysis was highly appropriate to determine the manner in which items should be grouped in order to form clusters or factors. Cluster analysis is a relatively new technique often overlooked by researchers familiar with factor analysis. Several of the approximately 100 available cluster analysis methods were employed to cluster the items. None of these attempts yielded results that were suitable for practical application. Thus, factor analysis was used to obtain groups of items.

Using data obtained from the vocational education respondents, factor analysis of the 49 statements of research need was accomplished using a program available in the Statistical Package for the Social Sciences (SPSS) and the University of Minnesota's Cyber 74 computer. The specific technique selected was principal factoring with iteration followed by varimax (orthogonal) rotation. The twelve resultant factors were forced into ten factors in order to maximize, on an intuitive basis, the content independence and cohesiveness of the data. The success of this procedure supports the construct validity of the instrument.

Once the ten factors were identified, additional analyses were then performed. The ten factors were rank ordered for each of the different areas of employment and vocational fields as well as the aggregate of all vocational education respondents and all industrial personnel. The extent of similarity of the

rank orderings between pairs of these categories was determined using Kendall's Tau.[2]

RESULTS

The item groupings that resulted from the factor analysis were each assigned a name to reflect the domain of content suggested by the items. Appendix C lists the items that comprise each of the ten factors. Titles assigned to the ten item groupings were as follows: (1) special learner groups, (2) planning and evaluation, (3) student services, (4) curriculum and program development, (5) staff development, (6) curriculum content, (7) inter-intra-agency communication, (8) staff utilization, (9) management, and (10) student and behavior problems.

Objective 1. Determine and prioritize general and specific research needs for vocational education in Minnesota that are perceived to be most critical.

Table 1 indicates the rank order of the ten factors as tabulated by responses from all vocational educators. The means represent the average response on the seven point Likert Scale for the items composing each factor as rated across all vocational educators. Factor 7, Inter-Intra-Agency Communication, was rated as having the greatest need for research (mean = 3.67) with Factors 5 and 6, Staff Development and Curriculum Content respectively, tied for second highest priority (mean = 3.51).

Industrial personnel rated the same three factors as having the highest priority though in a different order. Table 2 shows the ranked factors as rated by industrial personnel. Factor 6, Curriculum Content, was the highest rated factor with a mean rating of 4.10. The second highest factor was number 7, Inter-Intra-Agency Communication (mean = 3.57) followed by Factor 5, Staff Development, which had a mean rating of 3.38.

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[2]Kendall's Tau is a correlation coefficient which can range from -1.00, a perfect negative correlation, through 0, no relationship, to 1.00, a perfect positive correlation. It thus provides an index of similarity between two sets of ranked scores.

Table 1.

RANKED MEANS OF THE TEN FACTORS
FOR VOCATIONAL EDUCATORS

	FACTORS	MEAN	LOW 2.0 — MEDIUM 3.0 — CRITICAL 4.0
1.	Special Learner Groups	3.08	(10)
2.	Planning and Evaluation	3.28	(5)*
3.	Student Services	3.28	(5)*
4.	Curriculum & Program Development	3.27	(7)
5.	Staff Development	3.51	(2)*
6.	Curriculum Content	3.51	(2)*
7.	Inter-Intra-Agency Communication	3.67	(1)
8.	Staff Utilization	3.26	(8)
9.	Management	3.38	(4)
10.	Student & Behavior Problems	3.23	(9)

2.0 LOW — 3.0 MEDIUM — 4.0 CRITICAL

*Tied Ranks

Table 2.

RANKED MEANS OF THE TEN FACTORS
FOR INDUSTRIAL PERSONNEL

	FACTORS	MEAN	LOW 2.0 — MEDIUM 3.0 — CRITICAL 4.0
1.	Special Learner Groups	3.20	(8)*
2.	Planning and Evaluation	3.35	(4)
3.	Student Services	3.32	(5)
4.	Curriculum & Program Development	3.30	(6)
5.	Staff Development	3.38	(3)
6.	Curriculum Content	4.10	(1)
7.	Inter-Intra-Agency Communication	3.57	(2)
8.	Staff Utilization	3.20	(8)*
9.	Management	3.29	(7)
10.	Student & Behavior Problems	3.14	(10)

2.0 LOW — 3.0 MEDIUM — 4.0 CRITICAL

*Tied Ranks

In addition to rating the priority of 49 items concerning needs of vocational education, respondents were also requested to list any needs not stated in the instrument which they felt had very high priority. A total of 324 individuals made free responses yielding over 450 separate comments. However, a vast majority of the free responses were either inappropriate or already incorporated into the instrument. Many free responses generally only described specific applications of the existing items. Several responses provided novel elaboration on an item while others suggested needs not presently incorporated in the instrument. Representative responses, edited only for readability, are listed in Appendix D.

The free responses suggested several areas which received only brief or indirect mention or were overlooked entirely. These areas are (1) research, (2) governance, (3) future studies, and (4) licensing. A need for the items to have increased relevance for Minnesota was also evident. Research related comments collectively suggested the following additional items: (a) stimulate, facilitate and coordinate innovative research and development efforts, (b) increase the amount and improve the competencies of producers and consumers of career and/or vocational education research related materials, (c) disseminate research related information to assist research and development efforts and to facilitate the implementation of worthy education innovations, and (d) create knowledge and useful products that have potential for making long range and general qualitative improvements in vocational and/or career education.

Similarly, numerous responses suggested that vocational education governance was not adequately treated in the questionnaire. Generally, governance is not a researchable topic but research procedures can be used to assess and evaluate procedures and outcomes of policy. Items of this type might be phrased as follows: (a) identify the individuals and organizations responsible for creating and administering vocational education policy at the local, state, and national levels, (b) determine the procedures and information used to arrive at policy decisions, (c) determine the effect and assess the effectiveness of policy decisions, and (d) create and evaluate alternative suggestions for policy formulation given the context of vocational education.

A few free responses implied a need for vocational education to actively engage in future studies. Futurism is a rapidly expanding interdisciplinary field that employs numerous unique research and development techniques. Vocational education's need relative to futurism could be assessed with items such as (a) determine how the methodologies in future studies can be best adopted to vocational education, and (b) identify the issues and areas of concern in forecasting or designing the future relative to vocational education.

Attention to licensing (certification) often reveals strong biases and appears to be an issue supported with minimal research. Licensing, a narrower topic than those previously presented, is discussed here as a subset of staff development. Research has the potential to (a) identify the relationship between job requirements and training and/or work experience, and thus (b) establish minimum guidelines for licensing.

Two areas of need already incorporated in the instrument received numerous mentions in the free responses; these are (a) career education and (b) staff development and evaluation. The remainder of the free responses provided some elaboration of various current items; these assorted comments are also presented in Appendix D.

Objective 2. Determine the extent to which vocational education research needs of (a) vocational educators and (b) selected industrial personnel differ on the prioritized ratings.

Table 3 permits a visual comparison of the ten factors as rated by industrial personnel and vocational educators. The obvious similarity is further indicated by the high correlation of .78 (calculated using Kendall's Tau, see footnote 2) between the two ranked sets of factor means. Curriculum content was the factor where the greatest discrepency occurred (difference = .59).

Objective 3. Determine and prioritize the specific needs and general research areas indicated to be most critical for (a) each area of employment and (b) each vocational field as rated by vocational educators in Minnesota.

A tabulation of the individual item ratings, as broken down by area of employment and vocational field, is presented in Appendices E and F respectively. For each area and field the five highest item means have been rank ordered (as indicated by the numbers in parentheses). Consistent with expectations, the highest ranked items by area and field tend to be those that are ranked highest by all respondents as well as compose the factors which received higher priority ratings. On a more general level, Tables 4 and 5 show the rankings based on the mean responses to the ten factors for areas of employment and vocational fields.

Table 3.

COMPARISON OF RATINGS BETWEEN
VOCATIONAL EDUCATORS AND INDUSTRIAL PERSONNEL

FACTORS	MEAN	LOW 2.0 — MEDIUM 3.0 — CRITICAL 4.0
1. Special Learner Groups	3.08 3.20	(10) (8)
2. Planning and Evaluation	3.28 3.35	(5)* (4)
3. Student Services	3.28 3.32	(5)* (5)
4. Curriculum & Program Development	3.27 3.30	(7) (6)
5. Staff Development	3.51 3.38	(2)* (3)
6. Curriculum Content	3.51 4.10	(2)* (1)
7. Inter-Intra-Agency Communication	3.67 3.57	(1) (2)
8. Staff Utilization	3.26 3.20	(8) (8)
9. Management	3.38 3.29	(4) (7)
10. Student & Behavior Problems	3.23 3.14	(9) (10)

(Rank) VOCATIONAL EDUCATORS
INDUSTRIAL PERSONNEL

r = .78
*Tied Ranks

Table 4.

RANKED MEANS OF THE TEN FACTORS BY
AREA OF EMPLOYMENT FOR VOCATIONAL EDUCATORS

KEY: -Factor Mean -Rank by Area / FACTOR / AREA OF EMPLOYMENT	1. Special Learner Groups	2. Planning and Evaluation	3. Student Services	4. Curriculum and Program Development	5. Staff Development	6. Curriculum Content	7. Inter-Intra-Agency Communication	8. Staff Utilization	9. Management	10. Student and Behavior Problems
Junior & Senior High School	3.19 10	3.31 9	3.50 7	3.57 5	3.53 6	3.83 2	3.88 1	3.37 8	3.60 4	3.67 3
Secondary Vocational Center	3.20 10	3.31 9	3.44 5*	3.32 8	3.57 3	3.59 2	3.89 1	3.44 5*	3.40 7	3.52 4
Post Secondary Vocational	3.01 10	3.15 9	3.19 8	3.20 6*	3.47 2	3.36 3	3.60 1	3.23 5	3.33 4	3.20 6*
Junior & Community College	3.03 9	3.44 3*	3.34 6	3.31 7	3.44 3*	3.74 1	3.65 2	3.23 8	3.42 5	2.78 10
University & 4-Year College	3.27 8	3.62 4	3.37 6	3.30 7	3.70 2	3.73 1	3.67 3	3.18 10	3.39 5	3.25 9
State Education Agency	3.33 9	3.86 2*	3.42 7	3.43 6	3.89 1	3.86 2*	3.73 4	3.35 8	3.59 5	3.15 10
All Vocational Respondents	3.08 10	3.28 5*	3.28 5*	3.27 7	3.51 2*	3.51 2*	3.67 1	3.26 8	3.38 4	3.23 9

*Tied Ranks

Table 5.

RANKED MEANS OF THE TEN FACTORS BY
VOCATIONAL FIELD FOR VOCATIONAL EDUCATORS

KEY: -Factor Mean -Rank by Area / FACTOR / VOCATIONAL FIELD	1. Special Learner Groups	2. Planning and Evaluation	3. Student Services	4. Curriculum and Program Development	5. Staff Development	6. Curriculum Content	7. Inter-Intra-Agency Communication	8. Staff Utilization	9. Management	10. Student and Behavior Problems
Agriculture	2.92 9	3.26 4	3.09 6	3.05 7	3.55 1	3.23 5	3.49 3	2.82 10	3.53 2	2.93 8
Business and Office	2.96 10	3.28 8	3.36 6	3.41 5	3.70 3	3.71 2	3.79 1	3.33 7	3.44 4	3.16 9
Distributive	3.01 10	3.42 6	3.30 7	3.43 5	3.70 3	3.71 2	3.80 1	3.26 8	3.45 4	3.13 9
Health	3.06 8*	3.30 5	3.14 10	3.21 6	3.45 3	3.49 2	3.51 1	3.39 4	3.20 7	3.06 8*
Home Economics	3.23 7	3.52 4	3.11 .10	3.21 8	3.69 1*	3.53 3	3.69 1*	3.28 6	3.32 5	3.15 9
Technical	2.83 10	3.00 8	3.10 5*	2.96 9	3.39 2	3.30 3	3.58 1	3.10 5*	3.23 4	3.01 7
Trade and Industry	3.05 10	3.06 9	3.19 7	3.17 8	3.50 2	3.29 5	3.67 1	3.22 6	3.38 4	3.45 3
Special Needs	3.69 4	3.33 10	3.49 8	3.72 3	3.38 9	3.52 6*	3.77 2	3.52 6*	3.57 5	4.02 1
Administrator	3.17 10	3.56 3	3.47 5	3.41 7	3.42 6	3.69 2	3.74 1	3.27 8*	3.47 4	3.27 8*
Guidance	3.59 5	3.27 10	3.77 2	3.48 7	3.36 9	3.83 1	3.75 3	3.70 4	3.42 8	3.58 6
All Vocational Respondents	3.08 10	3.28 5*	3.28 5*	3.27 7	3.51 2*	3.51 2*	3.67 1	3.26 8	3.38 4	3.23 9

*Tied Ranks

Objective 4. Determine the extent to which the prioritized vocational education research needs of vocational educators are different across (a) areas of employment, and (b) vocational fields.

Table 4 appears to show substantial agreement between and among the areas of employment. A statistical procedure used to indicate this agreement is a correlation coefficient. (Refer to footnote 2.) Table 6 provides the correlations for all possible pairs of the areas of employment. As can be seen, some of the correlations are low (.200 to .289), a few are moderately high (.333 to .422) and several are exceptionally high (.644 to .867). Correlations of an area with all vocational respondents is of limited interpretative value since the responses of any given area partly comprise the total responses. Thus, correlations of an area with the total will tend to be inflated. In general, there appears to be agreement among and between the areas of employment.

Table 6.

CORRELATIONS OF THE FACTOR RANKINGS AMONG AREAS OF EMPLOYMENT FOR VOCATIONAL EDUCATORS*

AREA OF EMPLOYMENT	1.	2.	3.	4.	5.	6.	7.
1. Junior and Senior High School	——	.289	.244	.689	.644	.333	.511
2. University and 4-Year College	.289	——	.778	.333	.289	.867	.689
3. State Education Agency	.244	.778	——	.200	.422	.822	.644
4. Secondary Vocational Center	.689	.333	.200	——	.689	.378	.556
5. Post Secondary Vocational (AVTI)	.644	.289	.422	.689	——	.422	.600
6. Junior and Community College	.333	.867	.822	.378	.422	——	.822
7. All Vocational Respondents	.511	.689	.644	.556	.600	.822	——

*Calculated using Kendall's Tau

Review of Table 5 shows somewhat greater variability among vocational fields. Table 7 provides the correlations which indicate the consistency of factor rankings across the various fields. Of the 45 unique correlations between fields, 18 of them were low (-.239 to .270).[3] There were also 18 that were moderately high (.378 to .556) and 9 that can be considered very high (.600 to .778). With one exception, all of the lowest correlations were between personnel in guidance or special needs as compared to the other fields. Thus, excepting these two fields, there appears to be agreement among and between the vocational fields. Here again it must be cautioned that correlations between fields and all respondents are of limited interpretative value.

Objective 5. Determine if vocational education research priorities are related to the number of years an individual has been with vocational education.

A median split was employed to demark more and less years of vocational education experience. Nine years of experience was the point at which the respondents could be divided into approximately equal sized groups. Table 8 shows the factor rankings for these two groups. These rankings provide no practical basis for research funding decisions but when correlated they do indicate the extent to which an individual's number of years of association with vocational education tends to relate to prioritized research needs. As indicated in Table 8 these two groups correlate quite highly (.60) with each other, thus providing a general indication that years of association with vocational education mean little in the way in which research and development needs are prioritized.

[3] A negative correlation does indicate a relationship but in an inverse manner.

Table 7.

CORRELATIONS OF THE FACTOR RANKINGS
AMONG VOCATIONAL FIELDS FOR VOCATIONAL EDUCATORS*

VOCATIONAL FIELD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Agriculture	——	.405	.539	.511	.378	.467	.511	.379	-.289	-.225	.644
2. Home Economics	.405	——	.477	.494	.629	.450	.494	.360	-.135	-.250	.539
3. Administrator	.539	.477	——	.629	.584	.764	.539	.270	.000	-.159	.764
4. Business & Office	.511	.494	.629	——	.689	.778	.733	.511	.111	-.000	.867
5. Health	.378	.629	.584	.689	——	.556	.600	.378	.067	-.135	.644
6. Distributive	.467	.450	.764	.778	.556	——	.644	.422	.022	-.090	.867
7. Technical	.511	.494	.539	.733	.600	.644	——	.689	.200	.090	.778
8. Trade & Industrial	.379	.360	.270	.511	.378	.422	.689	——	.067	.225	.467
9. Guidance	-.289	-.135	.000	.111	.067	.022	.200	.067	——	.180	.067
10. Special Needs	-.225	-.250	-.159	.000	-.135	-.090	.090	.225	.180	——	-.135
11. All Vocational Respondents	.644	.539	.764	.867	.644	.867	.778	.467	.067	-.135	——

*Calculated using Kendall's Tau

Table 8.

RANKED MEANS OF THE TEN FACTORS BY
YEARS OF VOCATIONAL EDUCATION EXPERIENCE**

KEY: -Factor Mean -Rank by Area / FACTOR / YEARS EXPERIENCE	Special Learner Groups	Planning and Evaluation	Student Services	Curriculum and Program Development	Staff Development	Curriculum Content	Inter-Intra-Agency Communication	Staff Utilization	Management	Student and Behavior Problems
Nine or Less	3.09 10	3.24 8	3.26 7	3.27 6	3.50 3	3.52 2	3.67 1	3.30 5	3.32 4	3.19 9
More than Nine	3.09 10	3.32 5	3.31 6	3.27 8	3.52 2	3.49 3	3.67 1	3.23 9	3.44 4	3.28 7
All Vocational Respondents	3.08 10	3.23 5*	3.28 5*	3.27 7	3.51 2*	3.51 2*	3.67 1	3.26 8	3.38 4	3.23 9

*Tied Ranks

**The correlation between nine or less and more than nine years of vocational experience is .60 (calculated using Kendall's Tau).

Objective 6. Determine the extent to which vocational educators have been involved with the conduct of research and development activities.

The Survey of Vocational Education Needs contained four questions, each requiring a Yes/No response, that were used to assess research attitudes and activities of vocational educators. Listed below are the four questions.

1. Are you interested in conducting research?

2. Are you interested in knowing about the availability of research or development project funds?

3. Have you obtained state or federal funds to conduct research in the last three years?

4. Have you conducted research or development activities in the last three years?

Responses to these questions, as shown in Table 9, are broken down by area of employment and vocational field. The N for each question indicates the number of vocational educators

Table 9.

PERCENT OF PERSONS RESPONDING YES TO QUESTIONS 1-4
BY AREA OF EMPLOYMENT AND VOCATIONAL FIELD

AREA OF EMPLOYMENT	TOTAL N	QUESTION 1 N	QUESTION 1 PERCENT	QUESTION 2 N	QUESTION 2 PERCENT	QUESTION 3 N	QUESTION 3 PERCENT	QUESTION 4 N	QUESTION 4 PERCENT
Junior-Senior High School	74	32	43.3	55	74.3	6	8.1	25	33.8
4-Year College, University	86	57	66.3	71	82.6	28	32.6	55	64.0
State Education Agency	33	18	54.6	27	81.8	10	30.3	17	51.5
Secondary Vocational Center	112	57	50.9	80	71.4	8	7.2	39	39.8
Post-Secondary Vocational	567	245	43.2	382	67.4	38	6.7	160	28.2
Junior & Community College	88	50	56.8	73	83.0	8	9.1	40	45.5
Other	18	9	50.0	13	72.2	5	27.8	12	66.7
All Vocational Respondents	978	468	47.9	701	71.7	103	10.5	348	35.6
VOCATIONAL FIELD									
Agriculture	55	29	52.7	40	72.7	6	10.9	21	38.2
Home Economics	37	15	40.5	29	78.4	8	21.6	16	43.3
Administrator	162	89	54.9	135	83.3	36	22.2	90	55.6
Business & Office	130	55	42.3	89	68.5	11	8.5	40	30.8
Health	106	52	49.1	67	63.2	9	8.5	30	28.3
Distributive Education	55	22	40.0	41	74.6	4	7.3	24	43.6
Technical	89	50	56.2	62	69.7	2	2.3	19	21.4
Trade & Industry	233	92	39.5	152	65.2	9	3.9	54	23.2
Guidance	46	23	50.0	34	73.9	7	15.2	24	52.2
Special Needs	21	16	76.2	19	90.5	3	14.3	7	33.3
Other	29	18	62.1	24	82.8	5	17.3	15	51.7
All Vocational Respondents	963	461	47.9	692	71.9	100	10.4	340	35.3

responding yes to that question. In general, approximately half (47.9%) of those surveyed indicated an interest in conducting research and nearly three-fourths (71.7%) were interested in knowing about the availability of research or development project funds. Contrasted to this, only 10.5 percent have actually obtained state or federal funds in the last three years in order to conduct research. Slightly over one-third (35.6%) have actually conducted research in the last three years.

Interest in conducting research did not vary appreciably across areas of employment or vocational fields. Four-year college/university and special needs persons indicated a notably higher interest. Interest in research funding sources was highest for persons classified as four year college or university, state education agency, junior and community college, administrator, and special needs. Of those who have actually obtained state or federal research funds, four-year college/university, state education agency, home economics, and administrator were the areas and fields that had notably higher percents of involvement. Finally, the three groups, four-year college/university, state education agency, and administrator were the groups most actively engaged in conducting research.

Objective 7. Determine if there is a difference between the research and development priorities of 1976-77 and those of 1970 and 1971.

Two studies[4] conducted in 1970 and 1971 by the Minnesota Research Coordinating Unit were designed to identify research priorities in Minnesota. The first study sought to identify and rank order problem areas classified into (a) four levels of research related activites, and (b) as either disadvantaged or non-disadvantaged students. The second study, conducted one year later, was concerned with determining whether various groups of practitioners differed with respect to research priorities. Respondents were classified according to their (a) level of educational employment, (b) educational responsibility, and (c) research interest. Obviously, comparisons among and between these two studies and the current study will be substantially limited by the extent to which the objectives, the assessment instruments, and data analysis techniques differed.

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[4]These studies are available in a single publication: Smith, B. B., and Moss, J. Jr. Developing a State System of Managed Research and Development Activities in Vocational Education. Minnesota Research Coordinating Unit for Vocational Education, University of Minnesota, Minneapolis, Minnesota, February 1972.

More specifically, the first study employed a free-response questionnaire. These statements were categorized into nine content domains and then rank ordered (based on frequency of response) for each cell in a 2 x 4 matrix. The matrix consisted of four levels of research related activities on the first axis and disadvantaged/non-disadvantaged on the other axis. In general, two research areas (factors) seemed to predominately rank highest in the eight cells: these were (1) educational program and curriculum development, and (2) student characteristics.

The second study, conducted in 1971, also used a free-response format but analyzed statements by (1) educational responsibility (e.g., teacher, administrator, counselor), (2) level of employment (e.g., senior high, post-secondary, etc.), and (3) interest in research (i.e., yes/no). Comparisons of groups within these three areas showed no difference ($P > .10$) in prioritizing seven R & D problem aras. Based on frequency of response, two problem areas (factors), (1) curriculum development and (2) program planning, were cited most often.

Accepting these summaries permitted comparisons among the three studies. However, there were two hinderances in searching for trends. First, there were only three irregularly spaced studies and second, the identified content domains (e.g., curriculum development) often differed in quantity and definition across the three studies. Table 10 provides a gross comparison of the highest rated factors from each of the three studies. As indicated in the table, some liberty was taken in interpreting a few of the factors. Also, since the number of content domains (factors) differed in each study, the ranks were standardized with a mean of 50 and a standard deviation of 10 in order to permit mathematical inter-study comparability. Several trends appear evident. One trend reveals a continuing emphasis on some aspect of curriculum (Factors 1-3). Also, over the last six years, there appears to be a (1) decreasing emphasis on needs of student characteristics, and program planning, and (2) increasing emphasis on staff development and inter intra-agency communication needs.

Table 10.

PRIORITY STUDY COMPARISONS OF SELECTED FACTORS[a]

FACTOR	PRIORITY STUDY		
	1970	1971	1976-77
1. Educational Program and Curriculum Development	63.9	N/C	45.0
2. Curriculum Development	N/C	64.6	N/C
3. Curriculum Content	N/C	N/C	61.6
4. Program Planning	N/C	61.0	51.7[b]
5. Student Characteristics	59.3	53.7[b]	38.4[b]
6. Inter-Intra-Agency Communications	N/C	46.3	64.9
7. Staff Development	39.7	50.0	61.6

[a]See Text for Interpretation

[b]Similarity of factors across studies is marginal

N/C Not Comparable

INTERPRETATION AND DISCUSSION

Data in this study have been analyzed and presented at both specific and general levels. The specific level refers to analysis by item and the general level refers to analysis by groupings of items, i.e., factors. Further, each of these levels have been analyzed by the categories of area of employment, vocational field, all vocational education respondents and all industrial personnel respondents. Use of these data can be made by interpreting either or both levels of analysis as well as by interpreting individual or collapsed categories.

Prior to a discussion of alternative decisions, it is important to comment on the magnitude of differences between means

at both the general and specific levels of analysis. There is no sound statistical technique that can be applied to determine if there is a statistical difference between item or factor means. For example, it is not possible to say for industrial personnel that Factor 6 with a mean of 4.10 is significantly higher than Factor 7 which has a mean of 3.57. The only interpretation that can be made is one of practical significance, i.e., the decision maker's intuitive judgement of what constitutes an important difference. This becomes important since numerous factors impinge on the decision beyond just accepting the highest mean.

As has been mentioned, the data can be viewed at the general or specific levels or both levels simultaneously, thus providing for three interpretation strategies. The first strategy, initiated at the specific level, uses the weighted average of all respondents on individual items (refer to Appendix G). For example, one would find Item 24 to have the highest mean response for all respondents. Item 4 is an exceptionally close second. In fact, all subsequently ranked items have minimal differences between them. Also, of the five highest rated items, four relatively different content domains (factors) have been mentioned. It is likely that a replication of this study would noticably reorder the ranking of these items. Thus, a decision maker might more reasonably select from among these highest items and use other sources of information to arrive at a final decision.

An alternative procedure, for example, would be to select Factor 7 (refer to Table 1) as the general area of vocational education where the need for research is greatest. This technique of interpretation is intuitively more appealing since (a) there is a greater difference between factor means than item means (though it is not necessarily of practical significance), and (b) several of the higher ranked items fall into the more important factors.

The final technique of interpretation is a refinement of this procedure. Continuing with Factor 7, the highest factor for vocational educators, one can then investigate the specific items that comprise this factor. Appendix C indicates that Items 3, 4, 5, and 6 comprise this factor. Appendix G shows that two of these items were consistently ranked high. It is appealing to focus on Factor 7 and more specifically Items 3 and 4 since (a) inter-intra-agency communication is the general area of greatest need, and (b) Items 3 and 4 made the greatest contribution to making Factor 7 the highest rated factor.

The use of items or factors as broken down by areas of employment and vocational fields can be employed in two ways. First, any of the above three strategies could be used to select a research need for any area or field. Thus, given an impetus to initiate research in a specific area or field, a content domain can be selected. Secondly, if data from all respondents

(vocational or combined industrial and vocational) is used to determine research priorities, then data for the areas and fields, using Appendices E and F (for items) or Tables 6 and 7 (for factors), serve as an indicator as to which areas and fields might receive the greatest benefit from research efforts selected to benefit all vocational respondents.

Several techniques have been suggested as alternative ways to interpret the results of this study. The particular use of this data will depend on the type of decision to be made as well as on other sources of available information. This information might include: amount of available funds, number of projects to be funded, emphasis of current research projects, legislation, lobbyists, and availability of researchers.

LIMITATIONS AND RECOMMENDATIONS

Convenience sampling was the technique employed to select respondents from the vocational education and industrial personnel populations. Validity, in part, is contingent upon the extent to which these samples reflect the actual proportions of individuals in the various areas of employment, vocational fields, and industrial organizations found in the population. A current lack of complete data prohibited such a comparison. It is recommended that replications of this study acquire estimates of these parameters and/or employ a comprehensive stratified random sampling scheme.

The items in the survey were adopted verbatum from a national survey of vocational education needs. Though this served as an excellent source of comprehensive need statements, the items were quite general. More specifically, it would be beneficial to tailor the statements in order to reflect vocational education as defined and conducted in Minnesota. This might include additions and changes in terminology (e.g., AVTI, vocational center, etc.) and issues (e.g., certification, governance). The free response statements in Appendix D reveal the flavor of changes that would make the items maximally relevant to Minnesota.

SUMMARY AND CONCLUSIONS

Forty-nine need statements for vocational education, developed by Dr. Edward Morrison at The Center for Vocational and Technical Education, The Ohio State University, were incorporated into the 1976-77 Minnesota Survey of Vocational Education Needs. The survey was initiated at the request of the Minnesota Research and Development Review Committee in an attempt to prioritize vocational education research needs for input to research and development funding decisions.

Vocational educators (classified according to their vocational field and area of employment) and industrial personnel associated with training responded to the survey. The items, as rated on a five point Likert Scale, were summarized by vocational field, area of employment, vocational respondents, industrial respondents and all respondents. Similar analyses were performed on ten factors (i.e., groups of items).

For vocational educators, industrial personnel, and all respondents, Items 3, 4, 14, 22, and 24 were ranked in the top five by at least two of these groups. The contents of each of these items is available in Appendix B. Vocational Educators rated Items 24, 14, 3, 4, and then 40a as the highest. Industrial personnel rated Items 22, 4, 23, 24, and then 40g as the highest. On the average, Items 24, 4, 3, 22, and 14 were ranked as the top five. Similarly, there appeared to be a substantial amount of consistency of the same items being ranked in the top five when viewed by areas of employment and vocational fields. Items 3, 4, 5, 14, 24, and 40a were ranked in the top five by at least three of the six areas of employment. Items 3, 4, 11, 14, 22, 24, and 40a were ranked in the top five by at least four of the ten vocational fields. It is appealing to see the similarity among these groups, areas, and fields, but choosing first or second ranked items to be funded for research and development efforts is tenuous; reordering of item ranks should be expected upon replication of the study due to the minimal differences between item means.

The expected instability of item means upon replication lends extensive support to making funding decisions based on the highest ranked factor rather than item. Industrial personnel rated the curriculum content factor substantially above all others. This factor was rated second (tied with the staff development factor) by vocational educators. Inter- intra-agency communication was the factor ranked highest by vocational educators. Individual items composing each of these factors serve as a definition of the factor. Also, the highest rated items within a factor suggests the appropriate focus of funding. More

specifically, since inter- intra-agency communications was the factor rated as having the most critical priority of need (for vocational educators), a tenable recommendation would be to allocate funds to research on the following two items:

- Better communicate the benefits and content of vocational education to parents, students, employers, and general educators.

- Increase collaboration with key segments of the employment community (e.g., business, industry, organized labor, government).

Factor rankings have also been provided by areas of employment and vocational fields. These breakdowns provide information for funding of specific areas and fields and also serve to indicate which fields and areas might receive greatest benefit from a funding decision based on responses from all vocational educators.

Correlations among groups, areas, and fields are generally quite high. Responses of industrial personnel and vocational educators correlate .78. Tables 6 and 7 provide correlations among areas and fields. Special needs and guidance are the only fields that prioritize needs substantially different from all other fields. Similarity of rankings was also found when vocational educators' priorities were compared according to the number of years an individual has been associated with vocational education.

Nearly half of the vocational educators who responded expressed an interest in conducting research which exceeds by 12 percent the number that have actually conducted research in the last three years. Of those responding, there was a high interest (nearly three-fourths) in knowing about the availability of research or development project funds. This may in part account for the fact that only 10.5 percent have actually obtained state or federal funds in the last three years.

Over the past six years several trends appear evident. Curriculum was consistently cited as a higher priority need. Two areas, student characteristics and program planning, are perceived to be of decreasing importance. Finally, staff development and inter- intra-agency communication appear to have been increasing in importance during the last six years.

APPENDIX A

PERCENT OF RETURNS FOR (A) VOCATIONAL EDUCATORS
BY AREA OF EMPLOYMENT AND VOCATIONAL FIELD AND
(B) INDUSTRIAL PERSONNEL BY PROFESSIONAL MEMBERSHIP

PERCENT OF RETURNS
BY AREA OF EMPLOYMENT FOR VOCATIONAL EDUCATORS*

AREA OF EMPLOYMENT	MAILED	RETURNED	PERCENT
Junior & Senior High School	81	74	91.4
Secondary Vocational Center	269	112	41.6
Post Secondary Vocational	1488	567	38.1
Junior & Community College	272	88	32.4
University & 4-Year College	267	86	32.2
State Education Agency	83	33	39.8
Other	146	36	24.7
TOTAL	2430	998	41.1

*Percentages are approximate since people may have classified themselves differently than their corresponding code on the mailing list. Also, additional surveys not coded on the mailing list were sent out.

PERCENT OF RETURNS BY VOCATIONAL FIELD FOR VOCATIONAL EDUCATORS*

VOCATIONAL FIELD	MAILED	RETURNED	PERCENT
Agriculture	123	55	44.7
Business and Office	358	130	36.3
Distributive	106	55	51.9
Health	226	106	46.9
Home Economics	145	37	25.5
Technical	754	88	42.6
Trade and Industry		233	
Special Needs	26	21	80.8
Administrator	359	162	45.1
Guidance	52	46	88.5
Other	460	64	13.9
TOTAL	2430	998	41.1

*Percentages are approximate since people may have classified themselves differently than their corresponding code on the mailing list. Also, additional surveys not coded on the mailing list were sent out.

PERCENT OF RETURNS BY PROFESSIONAL MEMBERSHIP FOR INDUSTRIAL PERSONNEL

PROFESSIONAL MEMBERSHIP	MAILED	RETURNED	PERCENT
Administrative Management Society	193	60	31.09
American Society for Training and Development	496	154	31.43
Twin Cities Personnel Association	834	191	22.90
TOTAL	1523	364*	23.9

*This total is less than the sum of the above figures. It reflects the actual number of returns and not multiple memberships. Multiple memberships tend to falsely inflate the percent of returns for each of the professional organizations.

APPENDIX B

SURVEY INSTRUMENTS FOR VOCATIONAL EDUCATORS AND INDUSTRIAL PERSONNEL

Minnesota Research Coordinating Unit
for Vocational Education
Department of Vocational and Technical Education
University of Minnesota
Minneapolis, Minnesota 55455

1976-77 MINNESOTA SURVEY OF VOCATIONAL EDUCATION NEEDS

STAPLE HERE

PART I. PRIORITY NEEDS

INSTRUCTIONS: This survey needs your response to 40 statements of vocational education needs. These statements were developed from several thousand problems and goals nominated by vocational educators and from several hundred published recommendations of advisory groups, government sources, professional associations, and research and evaluation efforts.

Please, first read quickly through the list of needs. Then, rate the *priority* of each need *relative to the vocational education program(s) with which you are most concerned.* Indicate your rating by circling the appropriate number beside *each item.* Be sure to rate all needs in the list.

EXAMPLE

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
Improve the methods of evaluation of vocational personnel	1	2	3	(4)	5

Even though you may feel almost all items are important, it is necessary to distinguish between higher and lower priority needs. Use the ratings from 1 to 5 to rate the relative priority of need for each statement. A rating of 1 indicates a low priority of need and a rating of 5 indicates a critical need.

A need is an important difference between "what is" and "what ought to be." When rating the priority of a need, consider both the extent of the difference and the ***importance of reducing the difference.***

Remember, as you rate each item, keep in mind only the vocational education programs with which *you* are primarily concerned.

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
1. Incorporate new ideas more rapidly in vocational education.	1	2	3	4	5
2. Implement proven innovations when outside funds no longer are available.	1	2	3	4	5
3. Better communicate the benefits and content of vocational education to parents, students, employers, and general educators.	1	2	3	4	5
4. Increase collaboration with key segments of the employment community (e.g., business, industry, organized labor, government).	1	2	3	4	5
5. Increase cooperation with related educational areas (e.g., industrial arts, career education, pre-vocational education, academic subjects).	1	2	3	4	5
6. Increase cooperation among the various levels and departments of vocational education.	1	2	3	4	5
7. Provide improved data for planning and evaluating vocational programs.	1	2	3	4	5
8. Evaluate vocational education more effectively (e.g., impact, goal achievement, student outcomes, needs, cost-benefit).	1	2	3	4	5
9. Provide tools and techniques for improved planning, management, and evaluation of vocational education programs.	1	2	3	4	5
10. Develop practical procedures for measuring the relative cost-effectiveness of program alternatives.	1	2	3	4	5
11. Finance vocational education programs using local, state, and federal sources effectively.	1	2	3	4	5
12. Prepare an adequate supply of qualified vocational personnel for each leadership role.	1	2	3	4	5
13. Ensure that preservice preparation of vocational personnel meets present and emerging competency needs.	1	2	3	4	5
14. Improve opportunities for inservice vocational personnel to renew and expand their competencies.	1	2	3	4	5
15. Improve the methods for evaluation of vocational personnel.	1	2	3	4	5
16. Develop organizational and staffing patterns which optimize the effectiveness of personnel and resources.	1	2	3	4	5
17. Increase the participation of vocational teachers in supporting activities (e.g., curriculum development, community relations, job placement, follow-up, professional development).	1	2	3	4	5
18. Provide personnel to vocational programs from specialized areas (e.g., job placement, special education, remedial basic skills, teaching aids, psychology, social work, nursing, staff development).	1	2	3	4	5
19. Identify and improve the special skills needed by vocational personnel to work with special groups (e.g., disadvantaged, bilingual, incarcerated, handicapped, minorities).	1	2	3	4	5

Remember, as you rate each item, keep in mind only the vocational education programs with which *you* are primarily concerned.

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
20. Improve counselor education programs.	1	2	3	4	5
21. Improve the effectiveness with which on-site agents (e.g., curriculum coordinators, supervisors, teachers) bring about the adoption of valid innovations.	1	2	3	4	5
22. Ensure the relevance of vocational curricula to current job opportunities and practices through effective methods for identifying, selecting, and updating content.	1	2	3	4	5
23. Develop curricula which prepare students for clusters of up-to-date occupations.	1	2	3	4	5
24. Provide opportunities for all vocational students to acquire the basic skills (e.g., reading, communication, math) required for coursework and jobs.	1	2	3	4	5
25. Individualize teaching and learning (e.g., teaching techniques, management practices, and curriculum) to meet the needs of different kinds of learners.	1	2	3	4	5
26. Ensure efficient learning of vocational curricula through systematic methods (e.g., sequencing, allocating time to, and evaluating effects of instruction).	1	2	3	4	5
27. Increase the flexibility of vocational programs (e.g., flexible scheduling, alternative instructional strategies, performance-based certification, open entry and exit).	1	2	3	4	5
28. Improve the curriculum materials used by vocational students and educators.	1	2	3	4	5
29. Enroll students into all vocational programs on an equal opportunity basis.	1	2	3	4	5
30. Expand opportunities for all students to explore and practice job skills in both community and school settings.	1	2	3	4	5
31. Develop alternative methods for assisting students in transition from school to work (e.g., job seeking skills, coping with work entry and adjustment, work habits, attitudes).	1	2	3	4	5
32. Assist students with special problems (e.g., negative attitudes, absenteeism, dropout potential, financial need).	1	2	3	4	5
33. Develop ways to reduce and cope with distruptive or dangerous activities (e.g., delinquency, vandalism, discipline problems).	1	2	3	4	5
34. Provide comprehensive vocational guidance, counseling, placement, and follow-up services to all who need them.	1	2	3	4	5
35. Place vocational students in occupations related to their education through coordinated efforts at all levels (classroom, school, district, state, federal).	1	2	3	4	5
36. Improve and expand follow-up studies of former students and their employers.	1	2	3	4	5

Remember, as you rate each item, keep in mind only the vocational education programs with which *you* are primarily concerned.

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
37. Coordinate comprehensive guidance, counseling, placement, and follow-up services with business, industry, service agencies, and manpower information systems.	1	2	3	4	5
38. Develop a system for reliable identification of occupationally disadvantaged persons and for prescription of effective educational programs for them.	1	2	3	4	5
39. Expand post-secondary vocational education through applied studies and development of materials, programs,and methods.	1	2	3	4	5
40. Improve and expand vocational education to meet the needs of individuals who are: (Please, rate the priority for each group separately.)					
a. adults	1	2	3	4	5
b. inner-city residents	1	2	3	4	5
c. in sparsely populated rural areas	1	2	3	4	5
d. minority group members	1	2	3	4	5
e. limited in English-speaking ability	1	2	3	4	5
f. in correctional institutions	1	2	3	4	5
g. handicapped	1	2	3	4	5
h. disadvantaged	1	2	3	4	5
i. migrant	1	2	3	4	5
j. male/female (sex bias)	1	2	3	4	5

PART II. BACKGROUND

INSTRUCTIONS: Place an X in the appropriate box for each item below.

Personal Experience with Research:	YES	NO
1. Are you interested in conducting research?	☐	☐
2. Are you interested in knowing about the availability of research or development project funds?	☐	☐
3. Have you obtained state or federal funds to conduct research in the last three years?	☐	☐
4. Have you conducted research and/or development activities in the last three years?	☐	☐

Area of employment (check only one)

☐ Elementary ☐ 4-Year College ☐ Post Secondary Vocational (AVTI)
☐ Junior High School ☐ State Education Agency
☐ Senior High School ☐ Secondary Vocational Center ☐ Junior & Community College
☐ University ☐ Other (specify) _____

Vocational Field: (check only one)

☐ Agriculture ☐ Health ☐ Guidance
☐ Home Economics ☐ Distributive Education ☐ Special Needs
☐ Administrator ☐ Technical ☐ Other (specify) _____
☐ Business and Office ☐ Trade & Industry _____

1. I have been associated with vocational education for _____ years.
2. I have been in this role for _____ years.

PLEASE CONTINUE TO NEXT PAGE

Add below any needs not stated in the 40 item list which you feel should have *very high priority*.

WHEN COMPLETED, PLEASE FOLD IN, STAPLE AND MAIL.

The items in this survey were obtained from a national survey of vocational education needs that was conducted by Dr. Edward Morrison at The Center for Vocational and Technical Education, The Ohio State University.

Minnesota Research Coordinating Unit
for Vocational Education
Department of Vocational and Technical Education
University of Minnesota
Minneapolis, Minnesota 55455

1976-77 MINNESOTA SURVEY OF VOCATIONAL EDUCATION NEEDS

STAPLE HERE

PART I. PRIORITY NEEDS

INSTRUCTIONS: This survey needs your response to 40 statements of vocational education needs. These statements were developed from several thousand problems and goals nominated by vocational educators and from several hundred published recommendations of advisory groups, government sources, professional associations, and research and evaluation efforts.

Please, first read quickly through the list of needs. Then, rate the priority of each need relative to the criticalness of problems facing public vocational education. Indicate your rating by circling the appropriate number beside *each item*. Be sure to rate all needs in the list.

EXAMPLE

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
Improve the methods of evaluation of vocational personnel	1	2	3	(4)	5

Even though you may feel almost all items are important, it is necessary to distinguish between higher and lower priority needs. Use the ratings from 1 to 5 to rate the relative priority of need for each statement. A rating of 1 indicates a low priority of need and a rating of 5 indicates a critical need.

A need is an important difference between "what is" and "what ought to be." When rating the priority of a need, consider both the extent of the difference and the ***importance of reducing the difference.***

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
1. Incorporate new ideas more rapidly in vocational education.	1	2	3	4	5
2. Implement proven innovations when outside funds no longer are available.	1	2	3	4	5
3. Better communicate the benefits and content of vocational education to parents, students, employers, and general educators.	1	2	3	4	5
4. Increase collaboration with key segments of the employment community (e.g., business, industry, organized labor, government).	1	2	3	4	5
5. Increase cooperation with related educational areas (e.g., industrial arts, career education, pre-vocational education, academic subjects).	1	2	3	4	5
6. Increase cooperation among the various levels and departments of vocational education.	1	2	3	4	5
7. Provide improved data for planning and evaluating vocational programs.	1	2	3	4	5
8. Evaluate vocational education more effectively (e.g., impact, goal achievement, student outcomes, needs, cost-benefit).	1	2	3	4	5
9. Provide tools and techniques for improved planning, management, and evaluation of vocational education programs.	1	2	3	4	5
10. Develop practical procedures for measuring the relative cost-effectiveness of program alternatives.	1	2	3	4	5
11. Finance vocational education programs using local, state, and federal sources effectively.	1	2	3	4	5
12. Prepare an adequate supply of qualified vocational personnel for each leadership role.	1	2	3	4	5
13. Ensure that preservice preparation of vocational personnel meets present and emerging competency needs.	1	2	3	4	5
14. Improve opportunities for inservice vocational personnel to renew and expand their competencies.	1	2	3	4	5
15. Improve the methods for evaluation of vocational personnel.	1	2	3	4	5
16. Develop organizational and staffing patterns which optimize the effectiveness of personnel and resources.	1	2	3	4	5
17. Increase the participation of vocational teachers in supporting activities (e.g., curriculum development, community relations, job placement, follow-up, professional development).	1	2	3	4	5
18. Provide personnel to vocational programs from specialized areas (e.g., job placement, special education, remedial basic skills, teaching aids, psychology, social work, nursing, staff development).	1	2	3	4	5
19. Identify and improve the special skills needed by vocational personnel to work with special groups (e.g., disadvantaged, bilingual, incarcerated, handicapped, minorities).	1	2	3	4	5

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
20. Improve counselor education programs.	1	2	3	4	5
21. Improve the effectiveness with which on-site agents (e.g., curriculum coordinators, supervisors, teachers) bring about the adoption of valid innovations.	1	2	3	4	5
22. Ensure the relevance of vocational curricula to current job opportunities and practices through effective methods for identifying, selecting, and updating content.	1	2	3	4	5
23. Develop curricula which prepare students for clusters of up-to-date occupations.	1	2	3	4	5
24. Provide opportunities for all vocational students to acquire the basic skills (e.g., reading, communication, math) required for coursework and jobs.	1	2	3	4	5
25. Individualize teaching and learning (e.g., teaching techniques, management practices, and curriculum) to meet the needs of different kinds of learners.	1	2	3	4	5
26. Ensure efficient learning of vocational curricula through systematic methods (e.g., sequencing, allocating time to, and evaluating effects of instruction).	1	2	3	4	5
27. Increase the flexibility of vocational programs (e.g., flexible scheduling, alternative instructional strategies, performance-based certification, open entry and exit).	1	2	3	4	5
28. Improve the curriculum materials used by vocational students and educators.	1	2	3	4	5
29. Enroll students into all vocational programs on an equal opportunity basis.	1	2	3	4	5
30. Expand opportunities for all students to explore and practice job skills in both community and school settings.	1	2	3	4	5
31. Develop alternative methods for assisting students in transition from school to work (e.g., job seeking skills, coping with work entry and adjustment, work habits, attitudes).	1	2	3	4	5
32. Assist students with special problems (e.g., negative attitudes, absenteeism, dropout potential, financial need).	1	2	3	4	5
33. Develop ways to reduce and cope with disruptive or dangerous activities (e.g., delinquency, vandalism, discipline problems).	1	2	3	4	5
34. Provide comprehensive vocational guidance, counseling, placement, and follow-up services to all who need them.	1	2	3	4	5
35. Place vocational students in occupations related to their education through coordinated efforts at all levels (classroom, school, district, state, federal).	1	2	3	4	5
36. Improve and expand follow-up studies of former students and their employers.	1	2	3	4	5

	PRIORITY OF NEED				
	LOW		MEDIUM		CRITICAL
37. Coordinate comprehensive guidance, counseling, placement, and follow-up services with business, industry, service agencies, and manpower information systems.	1	2	3	4	5
38. Develop a system for reliable identification of occupationally disadvantaged persons and for prescription of effective educational programs for them.	1	2	3	4	5
39. Expand post-secondary vocational education through applied studies and development of materials, programs,and methods.	1	2	3	4	5
40. Improve and expand vocational education to meet the needs of individuals who are: (Please, rate the priority for each group separately.)					
a. adults	1	2	3	4	5
b. inner-city residents	1	2	3	4	5
c. in sparsely populated rural areas	1	2	3	4	5
d. minority group members	1	2	3	4	5
e. limited in English-speaking ability	1	2	3	4	5
f. in correctional institutions	1	2	3	4	5
g. handicapped	1	2	3	4	5
h. disadvantaged	1	2	3	4	5
i. migrant	1	2	3	4	5
j. male/female (sex bias)	1	2	3	4	5

PART II. BACKGROUND

INSTRUCTIONS: Place an X in the appropriate box for each item below.

INDUSTRIAL CLASSIFICATION: (Check only one)

- ☐ Agriculture, Forestry, and Fisheries
- ☐ Business and Repair Services
- ☐ Construction
- ☐ Entertainment and Recreation Services
- ☐ Finance, Insurance, and Real Estate
- ☐ Manufacturing
- ☐ Mining
- ☐ Personal Services
- ☐ Professional and Related Services
- ☐ Public Administration
- ☐ Transportation, Communications, and Other Public Utilities
- ☐ Wholesale and Retail Trade
- ☐ Other (specify) _____

OCCUPATION: (Please Print Occupational Title)

Title: _____

_____

1. I have been in this role for _____ years.
2. Occupational Code (DO NOT MARK) _____

PROFESSIONAL MEMBERSHIP: (Check all that apply)

☐ AMS ☐ ASTD ☐ TCPA ☐ None of these

PLEASE CONTINUE TO NEXT PAGE

Add below any needs not stated in the 40 item list which you feel should have *very high priority*.

WHEN COMPLETED, PLEASE FOLD IN, STAPLE AND MAIL.

The items in this survey were obtained from a national survey of vocational education needs that was conducted by Dr. Edward Morrison at The Center for Vocational and Technical Education, The Ohio State University.

APPENDIX C

VOCATIONAL EDUCATION NEED STATEMENTS
GROUPED BY FACTOR

ITEMS GROUPED BY FACTOR

Factor 1: Special Learner Groups

19. Identify and improve the special skills needed by vocational personnel to work with special groups (e.g., disadvantaged, bilingual, incarcerated, handicapped, minorities).

38. Develop a system for reliable identification of occupationally disadvantaged persons and for prescription of effective educational programs for them.

40a. Improve and expand vocational education to meet the needs of individuals who are adults.

40b. Improve and expand vocational education to meet the needs of individuals who are inner-city residents.

40c. Improve and expand vocational education to meet the needs of individuals who are in sparsely populated rural areas.

40d. Improve and expand vocational education to meet the needs of individuals who are minority group members.

40e. Improve and expand vocational education to meet the needs of individuals who are limited in English-speaking ability.

40f. Improve and expand vocational education to meet the needs of individuals who are in correctional institutions.

40g. Improve and expand vocational education to meet the needs of individuals who are handicapped.

40h. Improve and expand vocational education to meet the needs of individuals who are disadvantaged.

40i. Improve and expand vocational education to meet the needs of individuals who are migrant.

40j. Improve and expand vocational education to meet the needs of individuals who are male/female (sex bias).

Factor 2: Planning and Evaluation

7. Provide improved data for planning and evaluation vocational programs.

8. Evaluate vocational education more effectively (e.g., impact, goal achievement, student outcomes, needs, cost-benefit).

9. Provide tools and techniques for improved planning, management, and evaluation of vocational education programs.

10. Develop practical procedures for measuring the relative cost-effectiveness of program alternatives.

15. Improve the methods for evaluation of vocational personnel.

Factor 3: Student Services

31. Develop alternative methods for assisting students in transition from school to work (e.g., job seeking skills, coping with work entry and adjustment, work habits, attitudes).

34. Provide comprehensive vocational guidance, counseling, placement, and follow-up services to all who need them.

35. Place vocational students in occupations related to their education through coordinated efforts at all levels (classroom, school, district, state, federal).

36. Improve and expand follow-up studies of former students and their employers.

37. Coordinate comprehensive guidance, counseling, placement, and follow-up services with business, industry, service agencies, and manpower information system.

Factor 4: Curriculum and Program Development

24. Provide opportunities for all vocational students to acquire the basic skills (e.g., reading, communication, math) required for coursework and jobs.

25. Individualize teaching and learning (e.g., teaching techniques, management practices, and curriculum) to meet the needs of different kinds of learners.

26. Ensure efficient learning of vocational curricula through systematic methods (e.g., sequencing, allocating time to, and evaluating effects of instruction).

27. Increase the flexibility of vocational programs (e.g., flexible scheduling, alternative instructional strategies, performance-based certification, open entry and exit).

28. Improve the curriculum materials used by vocational students and educators.

29. Enroll students into all vocational programs on an equal opportunity basis.

30. Expand opportunities for all students to explore and practice job skills in both community and school settings.

39. Expand post-secondary vocational education through applied studies and development of materials, programs, and methods.

Factor 5: Staff Development

12. Prepare an adequate supply of qualified vocational personnel for each leadership role.

13. Ensure that preservice preparation of vocational personnel meets present and emerging competency needs.

14. Improve opportunities for inservice vocational personnel to renew and expand their competencies.

17. Increase the participation of vocational teachers in supporting activities (e.g., curriculum development, community relations, job placement, follow-up, professional development).

Factor 6: Curriculum Content

22. Ensure the relevance of vocational curricula to current job opportunities and practices through effective methods for identifying, selecting, and updating content.

23. Develop curricula which prepare students for clusters of up-to-date occupations.

Factor 7: Inter-Intra-Agency Communication

3. Better communicate the benefits and content of vocational education to parents, students, employers, and general educators.

4. Increase collaboration with key segments of the employment community (e.g., business, industry, organized labor, government).

5. Increase cooperation with related educational areas (e.g., industrial arts, career education, pre-vocational education, academic subjects).

6. Increase cooperation among the various levels and departments of vocational education.

Factor 8: Staff Utilization

16. Develop organizational and staffing patterns which optimize the effectiveness of personnel and resources.

18. Provide personnel to vocational programs from specialized areas (e.g., job placement, special education, remedial basic skills, teaching aids, psychology, social work, nursing, staff development).

20. Improve counselor education programs.

21. Improve the effectiveness with which on-site agents (e.g., curriculum coordinators, supervisors, teachers) bring about the adoption of valid innovations.

Factor 9: Management

1. Incorporate new ideas more rapidly in vocational education.
2. Implement proven innovations when outside funds no longer are available.
11. Finance vocational education programs using local, state, and federal sources effectively.

Factor 10: Student and Behavior Problems

32. Assist students with special problems (e.g., negative attitudes, absenteeism, dropout potential, financial need).
33. Develop ways to reduce and cope with disruptive or dangerous activities (e.g., delinquency, vandalism, discipline problems).

APPENDIX D

EXEMPLARY FREE RESPONSES

EXEMPLARY FREE RESPONSES

Research

a. Improve the quality of research.

b. A study to determine if there is a need for the RCU [Research Coordinating Unit]. Are its results being of benefit to Minnesota educators?

c. Short term practical-useful research funding...

d. There is a critical need for research money which would be available to [the] local AVTI.

e. Funds should be made available for substantive research of a conceptual or theoretical nature which aims at improvement of vocational education and vocational teacher education.

f. I feel a crucial need is the dissemination of results of research and projects that have been funded by public funds.

g. Determine ways to more effectively disseminate R & D information to local school districts.

h. Dissemination of research in such a fashion (i.e., language) that people in [the] field can understand it and use it.

Governance

a. Allow Vo-Tec's to be independent from the school district for self-governing in selection of teaching personnel, wages, and curriculum.

b. We need to leave [(discontinue)] our reliance on using vocational aid as bait to Superintendents to activate programs. Instead, we need regs., laws, court cases--that mandate offerings for students to meet their needs.

c. Political awareness of personnel.

d. State-wide coordination of programs (course content, objectives, length, etc.).

e. Centralized purchasing for all AVTI's.

f. Impact of tuition on AVTI enrollments. Implications of various forms of control on governance of AVTI's.

g. More interplay between community colleges and vocational students.

Governance (cont.)

h. Analysis of current legislation--affect on the nature of a discipline--resulting concerns -

i. Governance - extremely critical, regional concept - intermediate district control approach.

j. Governance - who should operate post-secondary AVTI's.

k. Study organizational relationships between vocational centers and secondary schools.

l. Study organizational relationships between local education agencies and the State Department of Vocational Education.

Future Studies

a. Work with other educational decision makers in forecasting future job trends where personnel will be needed.

b. Manpower projections, statewide, regional.

c. Better planning for the number of programs at different institutions in the same field - often a "popular" program gets duplicated until the number of graduates outpaces job availability.

Licensing

a. Certification of Special Needs Coordinators should count as Vocational experiences for endorsement in another area.

b. Keep Vocational Certification requirements as they are or raise work experience.

c. Minimum Trade Experience of 2 years should be raised to 5 years for Teacher Vocational Certification in all Trade and Industrial Program areas.

d. The selection of administrators through competency.

e. Please do not lose sight of the present trade and industry experience over college degree requirement for AVTI and State Vocational Certification.

Career Education

a. Career development for adults.

b. High school students need more opportunity for vocational exploration.

Career Education (cont.)

c. Career education in at least the Secondary Schools.

d. ...Develop the proper attitude toward the role that work will play in an individual's future...

e. Pre-enrollment career counseling.

Staff Development and Evaluation

a. Evaluate the school directors and assistant directors performance by all the teachers (outside evaluators) in each school and follow-up on recommendations made by the teachers and evaluators yearly.

b Hire administrators who are vocational minded and have had INDUSTRIAL EXPERIENCE.

c. Develop and use a more meaningful method of evaluating instructors.

d. Have instructors participate in technical societies and industrial associations.

e. Upgrade instructors knowledge by placing them in industrial settings at least 2 weeks of every year. Improve the professional teaching courses or reduce the requirements for Vocational Teachers.

f. Too much emphasis on college degree.

g. Consider the limited opportunities instructors have for upgrading themselves while teaching in a year round school.

Miscellaneous

a. Some attention needs to be given to the retired population, their needs and requirements to stay active in the volunteer or work community.

b. Learning to evaluate educational outcomes concerning personal effects on students (e.g., ways of thinking, values held).

c. Vocational education should become a part of general education...

d. ...Legal aid service...for all vocational students.

e. Student clubs activities which insure community involvement, loyalty to the American Way, repayment of loans and grants.

f. A critical need for industry and organized labor unions to become wedded "united" with all AVTI.

g. Promote ways for legislators and congressmen to see vocational education programs at [the] local level...

Miscellaneous (cont.)

h. Role of student organizations.

i. Who do we serve and how do we fit societies scheme of education and work?

APPENDIX E

ITEM MEANS BY AREA OF EMPLOYMENT

ITEM MEANS BY AREA OF EMPLOYMENT**

AREA OF EMPLOYMENT / ITEM	Junior and Community College	Post Secondary Vocational (AVTI)	Secondary Vocational Center	Junior and Senior High School	State Education Agency	University and 4-Year College	Weighted Average of All Vocational Respondents
N	88	567	112	74	33	86	960
1	3.19	3.16	3.00	3.29	3.52	3.18	3.17
2	3.41	3.29	3.43	3.69	3.58	3.62	3.39
3	3.48	3.88 (3)	4.15 (1)	4.12 (1)	3.91	3.58	3.86 (3)
4	3.82 (3)	3.83 (4)	3.77	3.90	4.06 (4)	3.74	3.83 (4)
5	3.72	3.43	4.07 (2)	3.99 (4)	3.39	3.84 (3)	3.61
6	3.57	3.39	3.63	3.57	3.55	3.60	3.47
7	3.59	3.24	3.37	3.41	4.03 (5)	3.62	3.36
8	3.70	3.21	3.37	3.42	3.94	3.91	3.39
9	3.37	3.21	3.46	3.38	4.12	3.63	3.34
10	3.30	3.00	3.05	3.18	3.52	3.34	3.10
11	3.72	3.62	3.96 (5)	4.00 (3)	3.67	3.55	3.69
12	3.13	3.32	3.44	3.49	3.55	3.53	3.35
13	3.63	3.52	3.70	3.69	4.00	4.07	3.62
14	3.78 (4)*	3.97 (1)	3.85	3.61	4.18 (3)	3.87 (1)	3.89 (2)
15	3.31	3.22	3.34	3.19	3.70	3.64	3.29
16	3.29	3.09	3.14	3.12	3.33	3.08	3.13
17	3.30	3.16	3.38	3.43	3.82	3.47	3.26

*Tied Ranks

57

**Numbers in parentheses indicate the rank of the above item means. Highest items are ranked 1-5 for each area.

ITEM MEANS BY AREA OF EMPLOYMENT

AREA OF EMPLOYMENT / ITEM	Junior and Community College	Post Secondary Vocational (AVTI)	Secondary Vocational Center	Junior and Senior High School	State Education Agency	University and 4-Year College	Weighted Average of All Vocational Respondents
N	88	567	112	74	33	86	960
18	3.33	3.38	3.41	3.27	3.12	3.11	3.33
19	3.10	3.19	3.39	3.38	3.39	3.35	3.25
20	3.27	3.45	3.99 (4)	3.84	3.64	3.43	3.53
21	3.15	3.17	3.31	3.34	3.52	3.30	3.23
22	3.75	3.61	3.70	3.82	4.21 (2)	3.79	3.69
23	3.78 (4)*	3.20	3.55	3.84	3.63	3.67	3.40
24	4.05 (1)	3.87 (3)	4.06 (3)	4.08 (2)	3.78	3.83 (4)*	3.91 (1)
25	3.30	3.30	3.38	3.87	3.50	3.41	3.37
26	3.15	3.02	3.05	3.45	3.64	3.29	3.11
27	3.42	3.22	3.34	3.41	3.70	3.27	3.29
28	3.03	3.34	3.33	3.80	3.64	3.45	3.36
29	3.02	2.79	3.00	3.07	3.16	3.12	2.91
30	3.48	3.16	3.67	3.92 (5)	3.49	3.31	3.32
31	3.28	3.25	3.59	3.77	3.67	3.42	3.36
32	3.19	3.64	3.79	3.82	3.27	3.34	3.58
33	2.38	2.80	3.26	3.51	3.03	3.20	2.90
34	3.45	3.35	3.63	3.71	3.58	3.38	3.43

ITEM MEANS BY AREA OF EMPLOYMENT

AREA OF EMPLOYMENT / ITEM	Junior and Community College	Post Secondary Vocational (AVTI)	Secondary Vocational Center	Junior and Senior High School	State Education Agency	University and 4-Year College	Weighted Average of All Vocational Respondents
N	88	567	112	74	33	86	960
35	3.28	3.27	3.49	3.71	3.15	3.24	3.32
36	3.34	3.01	3.30	3.04	3.33	3.45	3.13
37	3.40	3.24	3.34	3.37	3.39	3.34	3.30
38	3.08	3.14	3.17	3.46	3.09	3.29	3.18
39	3.17	3.18	2.96	3.10	2.85	2.85	3.10
40a	3.94 (2)	3.69 (5)	3.67	3.41	4.22 (1)	3.86 (2)	3.72 (5)
40b	3.08	2.98	3.24	3.26	3.73	3.48	3.12
40c	3.06	3.30	3.65	3.33	3.56	3.47	3.34
40d	3.06	2.95	3.20	3.29	3.46	3.34	3.08
40e	2.99	3.01	3.20	3.18	3.16	3.14	3.07
40f	2.83	2.79	3.08	3.24	3.03	3.22	2.91
40g	3.33	3.48	3.58	3.79	3.50	3.83 (4)*	3.54
40h	3.14	3.30	3.56	3.72	3.50	3.58	3.39
40i	2.76	2.72	2.86	3.03	3.07	3.11	2.82
40j	2.90	2.63	2.92	2.97	3.16	3.11	2.78

APPENDIX F

ITEM MEANS BY VOCATIONAL FIELD

ITEM MEANS BY VOCATIONAL FIELD**

VOCATIONAL FIELD / ITEM	Administrator	Agriculture	Business and Office	Distributive Education	Guidance	Health	Home Economics	Special Needs	Technical	Trade and Industry	Weighted Average of All Vocational Respondents
N	162	55	130	55	46	106	37	21	89	233	934
1	3.21	3.06	3.22	3.24	3.30	3.00	2.88	3.38	3.23	3.15	3.17
2	3.53	3.46	3.37	3.49	3.44	3.28	2.74	3.48	3.08	3.38	3.39
3	3.91 (2)*	3.80 (3)	3.94 (4)	3.96	3.83	3.59 (4)	4.03 (1)	3.71	3.88 (2)	3.95 (3)	3.86 (3)
4	3.90 (4)	3.62	3.99 (3)	4.04 (3)	3.76	3.47	3.66	3.76	3.75 (3)*	3.92 (4)	3.83 (4)
5	3.73	3.07	3.75	3.62	3.89	3.56	3.87 (5)	3.95	3.47	3.55	3.61
6	3.45	3.46	3.61	3.58	3.52	3.45	3.41	3.67	3.37	3.41	3.47
7	3.62	3.36	3.28	3.36	3.33	3.56	3.65	3.29	3.15	3.14	3.36
8	3.77	3.44	3.42	3.53	3.24	3.34	3.51	3.38	3.16	3.12	3.39
9	3.70	3.22	3.35	3.64	3.17	3.28	3.92 (3)	3.14	2.94	3.13	3.34
10	3.41	3.22	3.04	3.16	3.29	3.12	3.05	3.38	2.80	2.87	3.10
11	3.81 (5)	4.09 (2)	3.74	3.62	3.59	3.46	3.89 (4)	3.86	3.49	3.74 (5)	3.69
12	3.20	3.57	3.42	3.53	3.02	3.40	3.41	3.25	3.08	3.46	3.35
13	3.59	3.78 (4)	3.91	3.84	3.44	3.53	3.84	3.48	3.46	3.52	3.62
14	3.61	3.75 (5)	4.03 (2)	4.07 (2)	3.59	3.92 (1)	3.95 (2)	3.52	4.14 (1)	4.04 (1)	3.89 (2)
15	3.39	3.13	3.33	3.46	3.44	3.27	3.58	3.48	3.06	3.17	3.29
16	3.21	2.93	3.15	3.17	3.50	3.09	3.21	3.43	2.97	3.01	3.13
17	3.32	3.22	3.43	3.49	3.39	3.09	3.57	3.43	3.00	3.16	3.26

*Tied Ranks

**Numbers in parentheses indicate the rank of the above item means. Highest items are ranked 1-5 for each field.

ITEM MEANS BY VOCATIONAL FIELD

VOCATIONAL FIELD / ITEM	Administrator	Agriculture	Business and Office	Distributive Education	Guidance	Health	Home Economics	Special Needs	Technical	Trade and Industry	Weighted Average of All Vocational Respondents
N	162	55	130	55	46	106	37	21	89	233	934
18	3.21	2.80	3.35	3.18	4.04 (4)*	3.43	3.46	3.76	3.41	3.31	3.33
19	3.24	2.89	3.24	3.06	3.59	3.31	3.65	4.29	2.95	3.25	3.25
20	3.40	2.80	3.59	3.62	3.76	3.76 (3)	3.54	3.33	3.31	3.68	3.53
21	3.32	2.93	3.29	3.20	3.48	3.38	3.34	3.57	3.06	3.07	3.23
22	3.81	3.52	3.83 (5)	3.86 (4)	4.07 (3)	3.57 (5)	3.68	3.62	3.65 (5)	3.49	3.69
23	3.57	3.06	3.62	3.63	3.67	3.48	3.47	3.60	3.07	3.18	3.40
24	3.91 (2)*	3.31	4.07 (1)	4.11 (1)	4.02	3.87 (2)	3.41	4.35 (4)	3.75 (3)*	4.02 (2)	3.91 (1)
25	3.57	3.35	3.49	3.38	3.39	3.43	3.68	4.33 (5)	2.94	3.16	3.37
26	3.27	2.98	2.98	3.22	3.28	3.23	2.94	3.67	2.93	3.03	3.11
27	3.57	2.91	3.53	3.36	3.41	3.37	3.27	3.95	2.98	3.00	3.29
28	3.43	3.26	3.65	3.56	3.44	3.06	3.35	3.76	3.29	3.24	3.36
29	3.22	2.76	3.06	3.00	3.52	2.67	2.80	3.60	2.28	2.78	2.91
30	3.52	3.15	3.42	3.76	3.57	3.10	3.39	3.24	3.00	3.26	3.32
31	3.47	3.04	3.42	3.56	3.80	3.01	3.05	3.91	3.14	3.39	3.36
32	3.65	3.22	3.53	3.49	4.00	3.55	3.42	4.43 (3)	3.49	3.64	3.58
33	2.88	2.69	2.79	2.76	3.15	2.60	2.97	3.62	2.60	3.27	2.90
34	3.70	3.20	3.45	3.43	4.37 (1)	3.35	3.28	3.57	3.15	3.24	3.43

ITEM MEANS BY VOCATIONAL FIELD

VOCATIONAL FIELD / ITEM	Administrator	Agriculture	Business and Office	Distributive Education	Guidance	Health	Home Economics	Special Needs	Technical	Trade and Industry	Weighted Average of All Vocational Respondents
N	162	55	130	55	46	106	37	21	89	233	934
35	3.34	3.31	3.49	3.30	3.67	3.14	3.11	3.33	3.18	3.34	3.32
36	3.34	3.15	3.16	3.18	3.04	3.09	3.19	3.19	3.14	2.91	3.13
37	3.53	2.86	3.35	3.16	4.04 (4)*	3.18	3.11	3.43	3.18	3.16	3.30
38	3.27	2.87	3.09	3.06	3.59	3.26	3.38	4.05	2.82	3.17	3.18
39	2.96	2.81	3.27	3.16	3.24	3.12	3.22	3.40	3.05	3.09	3.10
40a	4.03 (1)	4.15 (1)	3.72	3.85 (5)	4.11 (2)	3.35	3.64	3.95	3.57	3.50	3.72 (5)
40b	3.21	2.69	3.11	3.15	3.59	3.14	3.17	3.40	2.69	3.09	3.12
40c	3.46	3.64	3.25	3.23	3.50	3.35	3.34	3.71	3.21	3.20	3.34
40d	3.26	2.72	3.04	3.15	3.78	3.11	3.06	3.33	2.74	2.97	3.08
40e	3.07	2.61	3.06	2.93	3.78	3.20	3.17	3.38	2.78	3.06	3.07
40f	2.93	2.61	2.90	2.85	3.29	2.68	3.34	3.45	2.71	2.94	2.91
40g	3.63	3.37	3.40	3.42	3.83	3.37	3.71	4.48 (2)	3.21	3.59	3.54
40h	3.52	3.17	3.29	3.29	3.67	3.39	3.58	4.52 (1)	2.85	3.36	3.39
40i	2.84	2.69	2.84	2.75	3.29	2.89	3.00	3.52	2.43	2.69	2.82
40j	2.91	2.23	2.67	2.67	3.44	2.87	2.92	2.71	2.74	2.71	2.78

APPENDIX G

ITEM MEANS FOR VOCATIONAL EDUCATORS,
INDUSTRIAL PERSONNEL, AND ALL RESPONDENTS

ITEM MEANS FOR VOCATIONAL EDUCATORS, INDUSTRIAL PERSONNEL, AND ALL RESPONDENTS*

	Vocational Educators	Industrial Personnel	Weighted Average of All Respondents		Vocational Educators	Industrial Personnel	Weighted Average of All Respondents		Vocational Educators	Industrial Personnel	Weighted Average of all Respondents
N / ITEM	984	283	1267	N / ITEM	984	283	1267	N / ITEM	984	283	1267
1	3.17	3.34	3.21	18	3.33	3.31	3.33	35	3.32	3.40	3.34
2	3.39	3.18	3.34	19	3.25	3.30	3.26	36	3.13	2.87	3.08
3	3.86[3]	3.70	3.82[3]	20	3.53	3.25	3.47	37	3.30	3.45	3.34
4	3.83[4]	4.09[2]	3.89[2]	21	3.23	3.11	3.20	38	3.18	3.13	3.17
5	3.61	3.56	3.60	22	3.69	4.23[1]	3.81[4]	39	3.10	2.95	3.07
6	3.47	3.08	3.38	23	3.40	4.02	3.53	40a	3.72[5]	3.43	3.66
7	3.36	3.42	3.37	24	3.91[1]	3.83[4]	3.90[1]	40b	3.12	3.46	3.20
8	3.39	3.63	3.44	25	3.37	3.31	3.37	40c	3.34	3.00	3.27
9	3.34	3.34	3.34	26	3.11	3.15	3.12	40d	3.08	3.56	3.19
10	3.10	3.22	3.13	27	3.29	2.97	3.22	40e	3.07	3.24	3.11
11	3.69	3.48	3.64	28	3.36	3.21	3.33	40f	2.91	3.13	2.96
12	3.35	3.36	3.37	29	2.91	3.62	3.07	40g	3.54	3.75[5]	3.59
13	3.62	3.68	3.63	30	3.32	3.64	3.40	40h	3.39	3.54	3.43
14	3.89[2]	3.42	3.79[5]	31	3.36	3.62	3.42	40i	2.82	2.88	2.84
15	3.29	3.32	3.30	32	3.58	3.31	3.52	40j	2.78	3.07	2.85
16	3.13	3.39	3.19	33	2.90	3.03	2.93				
17	3.26	3.27	3.26	34	3.43	3.39	3.43				

*Superscripts indicate the rank of the item means. Highest items are ranked 1-5 for each category.

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